

Dos Cuadras

Reference ID

Origin: California, USA

API Gravity 25.6 ESD 91

Equation(s) for Predicting Evaporation

$$\%Ev = (1.88 + 0.045T)\ln(t)$$

Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)

ESD 96

Sulphur (weight %)

Evaporation
(volume %)

0	1.24	ESD 93
11	1.17	
20	1.42	

Water Content (weight %)

Evaporation
(volume %)

0	0.1	ESD 98
11	<0.1	
20	<0.1	

Flash Point (°C)

Evaporation
(volume %)

0	<-30	ESD 91
11	53	ESD 92
20	>90	

Reid Vapour Pressure (kPa)

32 ESD 91

Density (g/mL)

Evaporation
(volume %)

Temperature
(°C)

0	0	0.9105	ESD 91
	15	0.9000	
11	0	0.9380	
	15	0.9270	
20	0	0.9467	
	15	0.9359	

Pour Point (°C)

Evaporation
(volume %)

0	-30	ESD 91
11	-3	
20	6	

Dynamic Viscosity (mPa-s or cP)

Evaporation
(volume %)

Temperature
(°C)

0	0	130	ESD 91
	15	51	
11	0	709	
	15	187	
20	0	3997	
	15	741	

Dos Cuadras

Reference ID

Emulsion Formation

Evaporation
(volume %)

0	Visual stability	unstable	ESD 98
11		mesostable	
	Viscosity (mPa·s)	800	
	Complex modulus (Pa)	3	
	Water content (wt %)	48	
20	Visual stability	mesostable	
	Viscosity (mPa·s)	9800	
	Complex modulus (Pa)	33	
	Water content (wt %)	69	

Chemical Dispersibility (volume %)

Evaporation
(volume %)

0	Corexit 9500	37	ESD 94
	Corexit 9527	5	ESD 93
	Dasic LTS	5	
	Enersperse 700	5	
11	Corexit 9500	15	ESD 97
	Corexit 9527	8	
	Dasic LTS	8	
	Enersperse 700	10	
20	Corexit 9500	7	
	Corexit 9527	10	
	Enersperse 700	0	

Hydrocarbon Groups (weight %)

Evaporation
(volume %)

0	Saturates	48	ESD 96
	Aromatics	30	
	Resins	17	
	Asphaltenes	6	
	Waxes	6	ESD 91
11	Saturates	42	ESD 96
	Aromatics	31	
	Resins	20	
	Asphaltenes	7	
	Waxes	4	ESD 98
20	Saturates	41	ESD 96
	Aromatics	31	
	Resins	19	
	Asphaltenes	9	
	Waxes	6	ESD 98

Adhesion (g/m²)

Evaporation
(volume %)

0		29	SD = 2	ESD 96
11		38	SD = 6	
20		56	SD = 9	

Volatile Organic Compounds (ppm)

Evaporation
(volume %)

0	Benzene	100	ESD 94
---	---------	-----	--------

Dos Cuadras

Reference ID

Volatil Organic Compounds (ppm)

Evaporation
(volume %)

0

Toluene 470
Ethylbenzene 610
Xylenes 1600
C3-benzenes 5050
Total BTEX 2780
Total VOCs 7830

ESD 94

11

Benzene 50
Toluene 410
Ethylbenzene 520
Xylenes 1550
C3-benzenes 5230
Total BTEX 2540
Total VOCs 7770

20

Benzene 0
Toluene 40
Ethylbenzene 0
Xylenes 40
C3-benzenes 1070
Total BTEX 80
Total VOCs 1150

Surface Tension (mN/m or dynes/cm)

Evaporation
(volume %)

0

Temperature
(°C)

0

28.9

ESD 91

15

28.1

11

0

30.3

15

28.7

20

0

NM

15

30.6

Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)

Evaporation
(volume %)

0

Temperature
(°C)

0

20.2

ESD 91

15

21.2

11

0

23.4

15

22.6

20

0

NM

15

21.0

Oil/Fresh Water Interfacial Tension (mN/m or

Evaporation
(volume %)

0

Temperature
(°C)

0

22.4

ESD 91

15

21.6

11

0

25.2

15

24.1

20

0

NM

15

23.1

Boiling Point Distribution (weight %)

Evaporation
(volume %)

0

Boiling Point
(°C)

40

Weight %

2

ESD 94

Dos Cuadras

Reference ID

Boiling Point Distribution (weight %)

Evaporation
(volume %)

Boiling Point
(°C)

Weight %

0

60

3

ESD 94

80

4

100

6

120

9

140

11

160

14

180

17

200

19

250

28

300

36

350

46

400

54

450

64

500

72

550

80

600

87

650

92

700

96

11

100

1

ESD 96

120

1

140

3

160

5

180

8

200

10

250

19

300

28

350

39

400

48

450

59

500

68

550

76

600

83

650

88

700

92

20

180

1

200

3

250

12

300

22

350

33

400

44

450

56

500

66

550

74

600

81

650

87

700

92

Boiling Point Distribution (°C)

Evaporation
(volume %)

Weight %

Boiling Point
(°C)

0

5

ESD 94

10

15

20

Dos Cuadras

Boiling Point Distribution (°C)	Weight %	Boiling Point (°C)	Reference ID
Evaporation (volume %)			
0	25		ESD 94
	30		
	35		
	40		
	45		
	50		
	55		
	60		
	65		
	70		
	75		
	80		
	85		
	90		
	95		
11	5		ESD 96
	10		
	15		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
	55		
	60		
	65		
	70		
	75		
	80		
	85		
	90		
	95		
20	5		
	10		
	15		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
	55		
	60		
	65		
	70		
	75		
	80		
	85		
	90		
	95		

Dos Cuadras

Reference ID

Metals (ppm)

Evaporation
(volume %)

0

Barium <0.3
Chromium <1.5
Copper <0.6
Iron 42.1
Lead <3
Magnesium 16.0
Molybdenum <0.6
Nickel 62.0
Titanium <0.6
Vanadium 70.5

Cao 92

12

Zinc <0.6
Barium <0.3
Chromium <1.5
Copper <0.6
Iron 42.3
Lead <3
Magnesium 1.8
Molybdenum <0.6
Nickel 51.0
Titanium <0.6
Vanadium 63.9

20

Zinc <0.6
Aluminum <5
Barium <0.3
Cadmium <0.5
Calcium 85.4
Chromium <1.5
Cobalt 2.1
Copper <0.6
Iron 46.5
Lead <3
Magnesium 7.4
Manganese <0.3
Mercury <15
Molybdenum <0.6
Nickel 61.0
Strontium <0.2
Tin <15
Titanium 0.7
Vanadium 74.0
Zinc 0.9

Aqueous Solubility (mg/L)

Room temperature

12

(a)

ESD 91

(a) fresh water

Acute Toxicity of Water Soluble Fraction (mg/L)

Test Organism

48h LC50

Daphnia magna

5

(a)

Harris 94

(a) results based on GC purge-and-trap analysis